

AMENDMENTS TO THE CLAIMS

Amendments to the Claims

This listing of claims will replace all prior listings in this application.

Listing of Claims:

1. (Currently amended) A method of fabricating a thin layer, in which a weak buried region is created by implanting a chemical species in a substrate in order to thereafter initiate a fracture of saidthe substrate along saidthe weak region to detach saidthe thin layer therefrom, saidthe method comprising:

a) implanting a first chemical species in the substrate at a first depth to form the weak buried region;

b) implanting at least one second chemical species, in the substrate at a second depth different from saidthe first depth and at an atomic concentration higher than the atomic concentration of saidthe first chemical species,

wherein saidthe at least one second chemical species is less effective than saidthe first chemical species at weakening the substrate and resides outside of the weak buried region, and

wherein steps a) and b) can be executed in either order;

c) diffusing at least a portion of saidthe at least one second chemical species from saidthe second depth to the vicinity of said first depth into the weak buried region, and

d) initiating saidthe fracture along saidthe first depth.

2. (Currently amended) A fabrication method according to claim 1, wherein saidthe second depth is greater than saidthe first depth.

3. (Currently amended) A fabrication method according to claim 1, wherein saidthe second depth is less than saidthe first depth.

4. (Currently amended) A fabrication method according to claim 2, wherein implanting at least one second chemical species is carried out before implanting saidthe

first chemical species.

5. (Currently amended) A fabrication method according to claim 1, wherein said diffusing at least a portion of saidthe second chemical species further comprises applying a heat treatment.

6. (Currently amended) A fabrication method according to according to claim 1, wherein initiating saidthe fracture further comprises applying a heat treatment.

7. (Previously presented) A fabrication method according to according to claim 5, wherein steps c) and d) are carried out simultaneously.

8. (Currently amended) A fabrication method according to according to claim 5, wherein applying saidthe heat treatment comprises carrying out saidthe heat treatment within a first thermal budget, wherein the first thermal budget is lower than a second thermal budget that would be necessary to initiate saidthe fracture in the absence of steps b) and c).

9. (Currently amended) A fabrication method according to claim 5, wherein applying saidthe heat treatment comprises carrying out saidthe heat treatment within a first thermal budget by implanting an additional amount of saidthe at least one second chemical species, such that saidthe first thermal budget is lower than a second thermal budget required in the absence of saidthe additional amount of saidthe at least one second chemical species.

10. (Currently amended) A fabrication method according to claim 5, wherein applying saidthe heat treatment comprises one or more of heating in a furnace, heating, or laser heating.

11. (Currently amended) A fabrication method according to wherein initiating saidthe fracture includes applying mechanical stresses.

12. (Currently amended) A fabrication method according to claim 11, wherein applying saidthe mechanical stresses comprises one or more of applying a jet of fluid,

inserting a blade into the implanted region, applying traction, applying shear or bending stresses to the substrate, or applying acoustic waves.

13. (Currently amended) A fabrication method according to claim 1, wherein, before or during initiating saidthe fracture, a thickener is applied to saidthe substrate to serve as a support for saidthe thin layer after saidthe fracture of saidthe thin layer from saidthe substrate.

14. (Currently amended) A fabrication method according to claim 1, wherein, before or during initiating saidthe fracture, a handle support is applied to saidthe substrate, after which saidthe thin layer is transferred onto a final support.

15. (Currently amended) A fabrication method according to claim 1 wherein saidthe first chemical species comprises hydrogen ions.

16. (Currently amended) A fabrication method according to claim 1, wherein saidthe at least one second chemical species comprises at least one rare gas.

17. (Previously presented) A thin layer fabricated by a method according to claim 1.

18. (Currently amended) A thin layer according to claim 17, further comprising a support underlying saidthe thin layer.

19. (Currently amended) A fabrication method according to claim 3, wherein implanting at least one second chemical species is carried out before implanting saidthe first chemical species.

20. (Previously presented) A fabrication method according to according to claim 6, wherein steps c) and d) are carried out simultaneously.

21. (Currently amended) A fabrication method according to according to claim 6, wherein applying saidthe heat treatment comprises carrying out saidthe heat treatment within a first thermal budget, wherein saidthe first thermal budget is lower

than a second thermal budget that would be necessary to initiate saidthe fracture in the absence of steps b) and c).

22. (Currently amended) A fabrication method according to according to claim 7, wherein applying saidthe heat treatment comprises carrying out saidthe heat treatment within a first thermal budget, wherein saidthe first thermal budget is lower than a second thermal budget that would be necessary to initiate saidthe fracture in the absence of steps b) and c).

23. (Currently amended) A method of fabricating a thin layer, in which a weak buried region is created by implanting a chemical species in a substrate in order to thereafter initiate a fracture of saidthe substrate along saidthe weak region to detach saidthe-the thin layer therefrom, saidthe method comprising:

a) implanting a first chemical species in the substrate at a first depth to form the weak buried region;

b) implanting at least one second chemical species, in the substrate at a second depth different from saidthe first depth and at a concentration higher than the concentration of saidthe first chemical species,

wherein saidthe at least one second chemical species is less effective than saidthe first chemical species at weakening the substrate and resides outside of the weak buried region, and

wherein steps a) and b) can be executed in either order;

c) diffusing at least a portion of saidthe at least one-second chemical species from saidthe second depth to the vicinity of said first depth into the weak buried region, and

d) initiating saidthe fracture along saidthe first depth,

wherein the method is carried out by either applying a heat treatment for less time and at a lower temperature than that necessary in the absence of step b), or by implanting an additional amount of saidthe at least one second chemical species to avoid exceeding a predetermined time/temperature regime.